

REMARKS

Claims 1-11, 13-15, 17, 18, 28-30, 32, and 33-37 have been canceled and claims 38-48 have been added. As such, claims 38-48 are currently pending in the case. Further examination and reconsideration of the presently claimed application are respectfully requested.

Section 103 Rejections

Claims 1-11, 13-15, 17, 18, 28-30, 32, 33, 35, and 37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,630,407 to Keil et al. (hereinafter referred to as “Keil”) and U.S. Patent 6,117,786 in view of Khajehnouri et al. (hereinafter referred to as “Khajehnouri”). Claims 34 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Keil and Khajehnouri and in further in view of U.S. Patent 6,403,484 to Lim et al. (hereinafter referred to as “Lim”). As noted above, claims 1-11, 13-15, 17, 18, 28-30, and 32-37 have been canceled rendering rejection thereto moot. Accordingly, Applicants respectfully request removal of this rejection.

Patentability of the Added Claims

The present amendment adds claims 38-48. Support for the limitations of claims 38-42 may be found, for example, in Figs. 1-6 and corresponding text of the specification in which the formation of a polysilicon device structure is described. Support for dependent claims 43-48 may be found, for example, in Figs. 7-12 and corresponding text of the specification in which the formation of a trench isolation region is described. As set forth below, none of the cited art teaches or suggests the limitations of claims 38-48. Consequently, approval of added claims 38-48 is respectfully requested.

None of the cited art, taken alone or in combination, teaches or suggests exposing a semiconductor topography to low density plasmas to successively etch an antireflective layer, a nitride layer, and a polysilicon layer within the topography. Added independent claim 38 recites:

A method for processing a semiconductor topography, comprising: exposing the semiconductor topography to a first low density plasma comprising a first noble gas heavier than helium to etch an anti-reflective layer of the semiconductor topography;

exposing the semiconductor topography to a second low density plasma comprising a second noble gas heavier than helium to etch portions of a nitride layer exposed during the etch of the anti-reflective layer; and exposing the semiconductor topography to a third low density plasma to etch portions of a polysilicon layer exposed during the etch of the nitride layer.

As noted in a response to a previous Office Action mailed October 19, 2005, none of Keil, Khajehnouri, and Lim teach or suggest exposing a semiconductor topography to a low density plasmas to etch layers therein. In particular, Keil specifically teaches employing medium and high density plasmas to etch antireflective coatings (see column 7, lines 31-32 and 64-65). In addition, Khajehnouri teaches using a medium density plasma to etch oxide layers (see column 2, lines 1-4). Lim, on the other had, does not teach plasma etching. Consequently, none of Keil, Khajehnouri, and Lim, taken alone or in combination, teach or suggest the limitations of claim 38.

It is noted that U.S. Patent 6,387,287 to Hung et al. (hereinafter referred to as "Hung"), which the Examiner cited in the current Office Action as teaching the use of a low density plasma etch chamber, does not teach exposing a semiconductor topography to low density plasmas to successively etch an antireflective layer, a nitride layer, and a polysilicon layer within the topography. Rather, Hung teaches a process for etching oxide which is selective to a non-oxide layer, which in some embodiments, is conducted in a low density plasma chamber. There is no teaching within Hung of etching polysilicon, much less applying the etch process described therein to etch polysilicon. Furthermore, there is no teaching within Hung of etching a nitride layer through the use of a low density plasma. Consequently, Hung does not teach the limitations of claim 38 nor can Hung be combined with Keil, Khajehnouri, and Lim to teach the limitations of claim 38. Consequently, claim 38 is patentably distinct from the cited art.

None of the cited art, taken alone or in combination, teaches or suggests exposing a semiconductor topography to low density plasmas to successively etch an antireflective layer, a dielectric layer, and a semiconductor layer within the topography.

Added independent claim 43 recites:

A method for processing a semiconductor topography, comprising: exposing the semiconductor topography to a first low density plasma comprising a first noble gas heavier than helium to etch an anti-reflective layer of the semiconductor topography; exposing the semiconductor topography to a second low density plasma comprising a second noble gas heavier than helium to etch portions of a first dielectric layer exposed during the etch of the anti-reflective layer; and exposing the semiconductor

topography to a third low density plasma to etch portions of a semiconductor layer exposed during the etch of the first dielectric layer.

As noted above, none of Keil, Khajehnouri, and Lim teach or suggest exposing a semiconductor topography to a low density plasmas to etch layers therein. Therefore, none of Keil, Khajehnouri, and Lim, taken alone or in combination, teach or suggest the limitations of claim 43. Furthermore, Hung fails to teach or suggest etching semiconductor materials, much less applying the etch process described therein to etch semiconductor materials. Consequently, Hung does not teach the limitations of claim 43 nor can Hung be combined with Keil, Khajehnouri, and Lim to teach the limitations of claim 43. Accordingly, claim 43 is patentably distinct from the cited art.

For at least the reasons cited above, independent claims 38 and 43, as well as claims dependent therefrom, are patentably distinct from the cited art. Accordingly, approval of added claims 38-48 is respectfully requested.

CONCLUSION

This response constitutes a complete response to the issues raised in the Office Action mailed January 11, 2006. In view of the remarks herein, Applicants assert that pending claims 38-48 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees, which may be required, or credit any overpayment, to Daffer McDaniel LLP Deposit Account No. 50-3268/5298-06900.

Respectfully submitted,
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